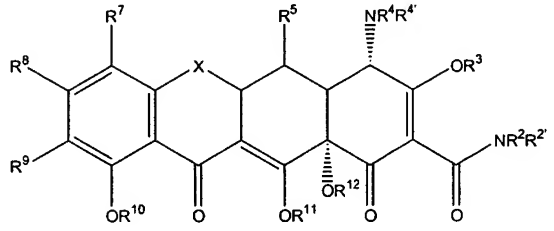
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of the claims and listing of the claims in the application:

1. (Currently Amended) A substituted tetracycline compound, wherein said compound is of the formula:



(I)

wherein:

X is $CHC(R^{13}Y'Y)$, $CR^{6'}R^{6}$, S, NR^{6}, or O;

R^{2} is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

R^{4} and $R^{4'}$ are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$R^{2'}$, R^{3}, R^{10}, R^{11} and R^{12} are each hydrogen or a pro-drug moiety;

R^{5} is hydrogen, hydroxyl, or a prodrug moiety;

R^{6}, $R^{6'}$, and R^{8} are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

R^{7} is hydrogen, dialkylamino, heteroaryl-amino, or $NR^{7c}C(=W')WR^{7a}$;

R^{8} is hydrogen;

R^{13} is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

Y' and Y are each independently hydrogen; halogen; hydroxyl; cyano, sulfhydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

R^{9} is hydrogen, $NR^{9c}C(=Z')ZR^{9a}$, or heteroaryl-amino;

Z is $CR^{9d}R^{9e}$, NR^{9b}, or O;

Z' is O or S;

R^{9a}, ~~R^{9b}, R^{9c},~~ R^{9d}, and R^{9e} are each independently ~~hydrogen,~~ ethyl, t-butyl, n-butyl, i-butyl, or n-pentyl, ~~alkenyl,~~ alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and R^{9d} and R^{9e} may be linked to form a ring;

R^{9b} and R^{9c} are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic;

W is $CR^{7d}R^{7e}$, NR^{7b} or O;

W' is O or S; and

R^{7a}, R^{7b}, R^{7c}, R^{7d}, and R^{7e} are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and R^{7d} and R^{7e} may be linked to form a ring;

and pharmaceutically acceptable salts thereof, provided that at least one of R^9 is not hydrogen when R^7 is hydrogen or dialkylamino.

2. (Original) The compound of claim 1, wherein R^2, $R^{2'}$, R^3, R^8, R^{10}, R^{11}, and R^{12} are each hydrogen.

3. (Original) The compound of claim 2, wherein R^4 and $R^{4'}$ are each alkyl.

4. (Original) The compound of claim 3, wherein R^4 and $R^{4'}$ are each methyl

5. (Original) The compound of claim 4, wherein said compound is a derivative of tetracycline, minocycline, sancycline, doxycycline, chlortetracycline, oxytetracycline, demeclocycline, or methacycline

6. (Original) The compound of claim 4, wherein R^5 is hydrogen.

7. (Original) The compound of claim 6, wherein X is CH_2, and R^7 is hydrogen.

8. (Original) The compound of claim 6, wherein X is CH_2, and R^7 is $N(Me)_2$.

9. (Original) The compound of claim 4, wherein R^5 is hydroxyl or a prodrug moiety, and X is CHR^6.

10. (Original) The compound of claim 9, wherein R^5 is hydroxyl and R^6 is CH_3.

11. (Original) The compound of claim 1, wherein R^9 is $NR^{9c}C(=Z')ZR^{9a}$.

12. (Original) The compound of claim 11, wherein R^{9c} is hydrogen.

13. (Original) The compound of claim 11, wherein Z' is oxygen.

14. (Original) The compound of claim 11, wherein Z' is sulfur.

15. (Original) The compound of claim 13 or 14, wherein Z is NR^{9b}.

16. (Original) The compound of claim 13 or 14, wherein Z is oxygen.

17. (Original) The compound of claim 13 or 14, wherein Z is sulfur.

18. (Original) The compound of claim 13 or 14, wherein Z is $CR^{9d}R^{9e}$.

19. (Currently Amended) The compound of claim 11, wherein R^{9a} is selected from the group consisting of ~~alkyl~~, ethyl, t-butyl, n-butyl, i-butyl, or n-pentyl, alkenyl, alkynyl, aryl, arylalkyl, heteroaromatic, and multicyclic.

20. (Cancelled)

21. (Currently Amended) The compound of claim ~~20~~ 19, wherein R^{9a} is substituted with one or more substituents selected from the group consisting of alkoxycarbonyl, amino, arylcarbonyl, halogen, hydroxy, alkylamino, alkoxy, or aryl.

22. (Cancelled)

23. (Currently Amended) The compound of claim ~~21~~ 19, wherein said ~~alkyl~~ ethyl, t-butyl, n-butyl, i-butyl, or n-pentyl is substituted with an aryl group.

24. (Original) The compound of claim 23, wherein said aryl group is phenyl.

25. (Currently Amended) The compound of claim ~~21~~ 19, wherein said ~~alkyl~~ ethyl, t-butyl, n-butyl, i-butyl, or n-pentyl is substituted with one or more halogens.

26. (Original) The compound of claim 24, wherein said halogen is bromine.

27. (Original) The compound of claim 19, wherein R^{9a} is multicyclic.

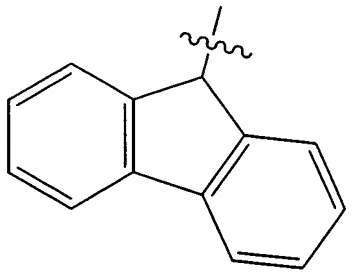
28. (Currently Amended) The compound of claim 27, wherein R^{9a} is ~~steroidyl~~ a steroid.

29. (Original) The compound of claim 28, wherein R^{9a} is cholesterol.

30. (Original) The compound of claim 19, wherein R^{9a} is substituted or unsubstituted aryl.

31. (Original) The compound of claim 30, wherein said substituted or unsubstituted aryl is naphthyl.

32. (Original) The compound of claim 30, wherein said substituted or unsubstituted aryl is of the formula:



33. (Original) The compound of claim 30, wherein said substituted or unsubstituted aryl is phenyl.

34. (Original) The compound of claim 33, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, amido, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

35. (Original) The compound of claim 34, wherein said substituent is alkyl.

36. (Original) The compound of claim 35, wherein said alkyl is unsubstituted.

37. (Original) The compound of claim 35, wherein said alkyl is methyl.

38. (Original) The compound of claim 35, wherein said alkyl is substituted with one or more halogens.

39. (Original) The compound of claim 34, wherein said substituent is methoxy.

40. (Original) The compound of claim 34, wherein said substituent is selected from the group consisting of alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, and amido.

41. (Original) The compound of claim 1, wherein R^9 is heteroaryl-amino.

42. (Original) The compound of claim 41, wherein said heteroaryl is substituted or unsubstituted thioazolyl.

43. (Original) The compound of claim 42, wherein said heteroaryl is substituted thioazolyl.

44. (Original) The compound of claim 43, wherein said thiazolyl is substituted with a substituted or unsubstituted aryl.

45. (Original) The compound of claim 46, wherein said aryl is phenyl.

46. (Original) The compound of claim 44, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy,

alkylcarbonyl, arylcarbonyl, amido, trifluoromethyl, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

47. (Original) The compound of claim 46, wherein said substituent is nitro.

48. (Original) The compound of claim 46, wherein said substituent is alkyl.

49. (Original) The compound of claim 48, wherein said alkyl substituent is methyl.

50. (Original) The compound of claim 46, wherein said substituent is selected from the group consisting of alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, and amido.

51. (Original) The compound of claim 50, wherein said substituent is alkoxycarbonyl.

52. (Original) The compound of claim 51, wherein said substituent is ethoxycarbonyl.

53. (Currently Amended) The compound of claim 1, wherein said compound is selected from the group consisting of:
Doxycycline 9-carbamic acid 9*H*-fluoren-9-ylmethyl ester;
(9-(Naphthyn-1-yl) doxycycline urea;
9-(3-Methyl-1-butyl) doxycycline urea;
9-Phenyl doxycycline urea;
9-t-Butyl doxycycline urea;
FMOC 9-amino doxycycline;
9-(4'-Chloro-2'-trifluoromethylphenyl) doxycycline urea;
9-(4'-Fluorophenyl) doxycycline carbamate;
9-(4'-Methoxyphenyl) doxycycline carbamate;
9-BOC amino doxycycline;
9-(Phenylthiazolyl) amino doxycycline;
9-(Ethylthiazolyl) amino doxycycline;
(4-Fluorophenylthiazolyl) amino doxycycline;
9-(4'-Methoxyphenylthiazolyl) amino doxycycline;
9-(3'-Nitrophenylthiazolyl) amino doxycycline;

9-(4'-Methyl, 5'-phenylthiazolyl) amino doxycycline;
9-Neopentyl minocycline carbamate;
9-(Phenylthiazolyl) amino sancycline;
9-(Adamantylthiazolyl) amino doxycycline;
9-(Naphthyn-1-yl urea) Doxycycline 5-propanoic acid ester;
Doxycycline 9-Thiocarbamic acid 9*H*-fluoren-9-ylmethyl ester;
(9-(Naphthyn-1-yl) doxycycline thiourea;
9-(3-methyl-1-butyl) doxycycline thiourea;
9-Phenyl doxycycline thiourea;
9-t-Butyl doxycycline thiourea;
9-(4'-Chloro-2'-trifluoromethylphenyl) doxycycline thiourea;
9-(4'-Fluorophenyl) doxycycline thiocarbamate;
9-(4-Methoxyphenyl) doxycycline thiocarbamate;
9-Neopentyl minocycline thiocarbamate;
9-(Naphthyn-1-yl) doxycycline thiourea 5-propanoic acid ester;
Minocycline 9-carbamic acid 9*H*-fluoren-9-ylmethyl ester;
(9-(Naphthyn-1-yl) minocycline urea;
9-(3-Methyl-1-butyl) minocycline urea;
9-Phenyl doxycycline urea;
9-t-Butyl minocycline urea;
FMOC 9-amino minocycline;
9-(4'-Chloro-2'-trifluoromethylphenyl) minocycline urea;
9-(4'-Fluorophenyl) minocycline carbamate;
9-(4'-Methoxyphenyl) minocycline carbamate;
9-BOC amino minocycline;
9-(Phenylthiazolyl) amino minocycline;
9-(Ethylthiazolyl) amino minocycline;
(4'-Fluorophenylthiazolyl) amino minocycline;
9-(4'-Methoxyphenylthiazolyl) amino minocycline;
9-9-(3'-Nitrophenylthiazolyl) amino minocycline;
9-(4'-Methyl, 5'-phenylthiazolyl) amino doxycycline; and
9-Neopentyl doxycycline carbamate; and pharmaceutically acceptable salts and prodrugs thereof.

54. (Original) The compound of claim 1, wherein said compound is selected from the group consisting of:

9-(Phenylthiazolyl) amino minocycline;

9-(Adamantylthiazolyl) amino minocycline;

Minocycline 9-thiocarbamic acid 9*H*-fluoren-9-ylmethyl ester;

(9-(Naphthyn-1-yl) minocycline thiourea;

9-(3'-Methyl-1-butyl) minocycline thiourea;

9-Phenyl minocycline thiourea;

9-t-Butyl minocycline thiourea;

9-(4'-Fluorophenyl) minocycline thiocarbamate;

9-(4'-Methoxyphenyl) minocycline thiocarbamate;

9-Neopentyl doxycycline thiocarbamate;

9-(2'-Bromoethyl) doxycycline carbamate;

9-(n-Pentyl) minocycline carbamate;

9-(4'-Benzoylbenzoyl) amino doxycycline;

7-(3'-Nitrophenylthiazolyl) amino sancycline;

9-(3'-Ethoxycarbonylthiazolyl) amino doxycycline;

7-(4'-Methylphenyl) sancycline carbamate;

9-(4'-Trifluoromethoxyphenyl) minocycline urea;

9-(3', 5'-diperfluorophenyl) minocycline thiourea;

9-Prop-2'-enyl minocycline carbamate;

9-(4'-Chloro, 2'-nitrophenyl) minocycline urea;

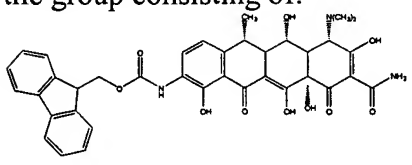
9-Ethyl minocycline carbamate;

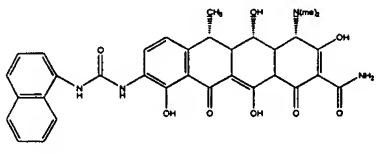
9-n-Butyl minocycline carbamate;

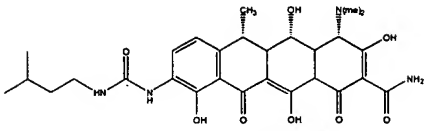
9-n-But-3-enyl minocycline carbamate;

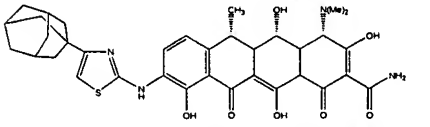
9-i-Butyl minocycline carbamate, and pharmaceutically acceptable salts and prodrugs thereof.

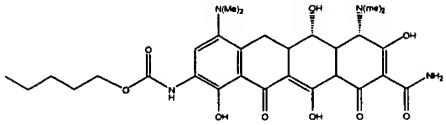
55. (Currently Amended) The compound of claim 1, wherein said compound is selected from the group consisting of:

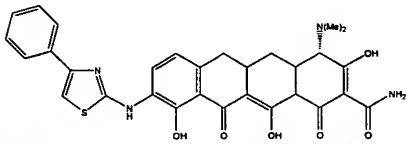


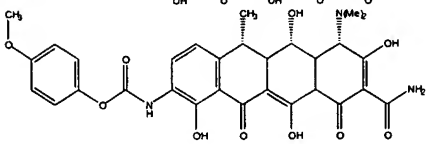


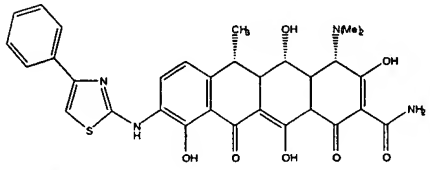


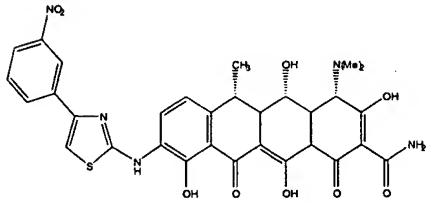


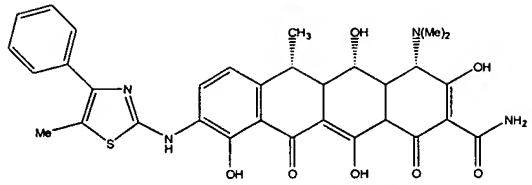


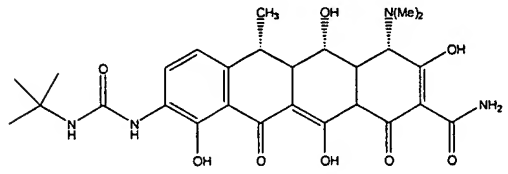


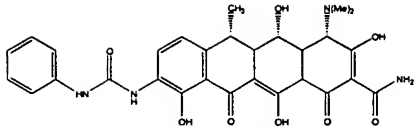


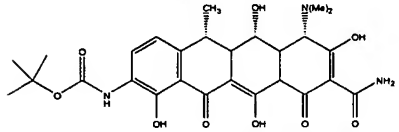


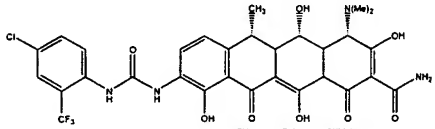


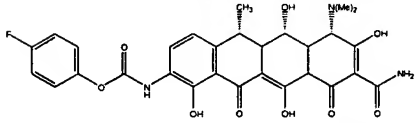


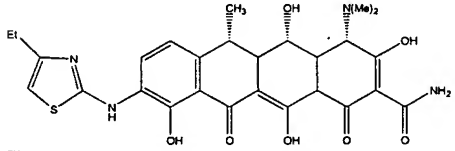


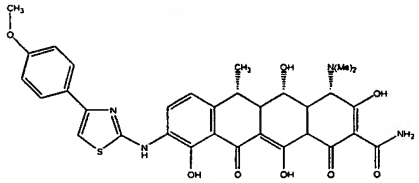


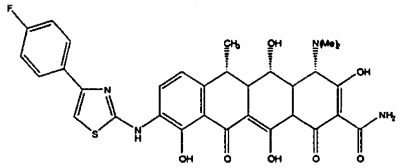


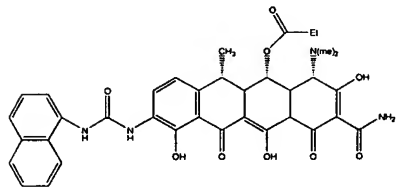


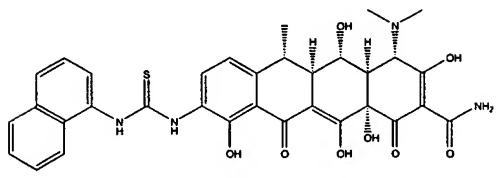


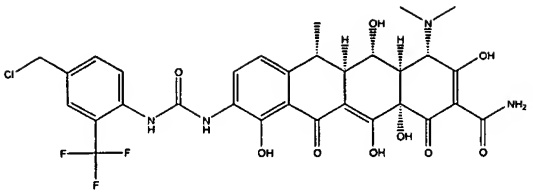
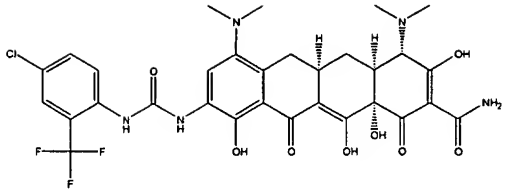
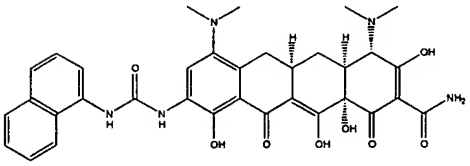
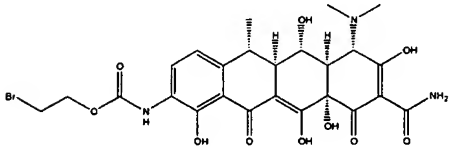
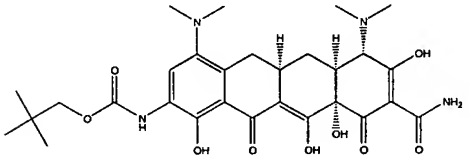
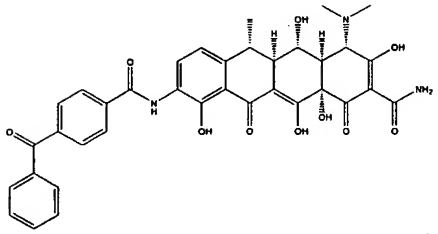
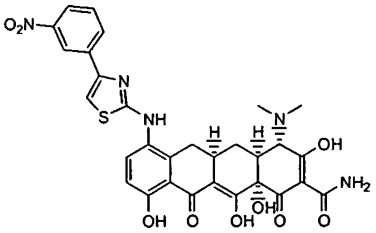
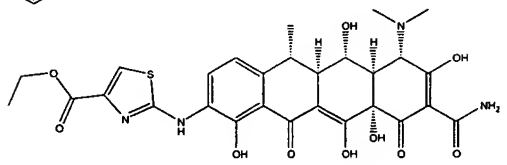
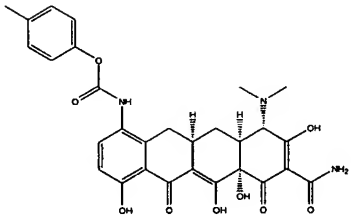
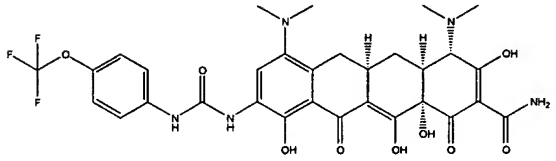
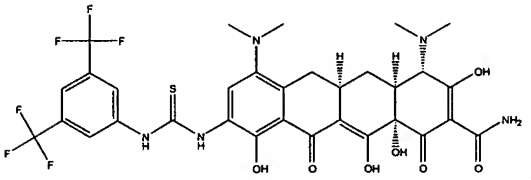
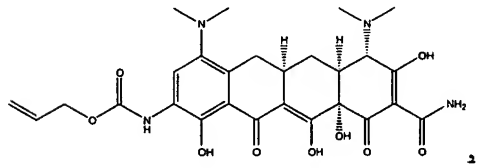










and

and pharmaceutically acceptable salts and prodrugs thereof.

56. (Original) The compound of claim 1, wherein R^7 is $NR^{7c}C(=W')WR^{7a}$.

57. (Original) The compound of claim 56, wherein R^9 is hydrogen.

58. (Original) The compound of claim 57, wherein R^{7c} is hydrogen.

59. (Original) The compound of claim 57, wherein W' is oxygen.

60. (Original) The compound of claim 57, wherein W' is sulfur

61. (Original) The compound of claims 59 or 60, wherein W is NR^{7b}.

62. (Original) The compound of claims 59 or 60, wherein W is oxygen.

63. (Original) The compound of claim 57, wherein R^{7a} is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, arylalkyl, heteroaromatic, and multicyclic.

64. (Original) The compound of claim 63, wherein R^{7a} is substituted or unsubstituted alkyl.

65. (Original) The compound of claim 64, wherein said alkyl is substituted with an aryl group.

66. (Original) The compound of claim 63, wherein said substituted or unsubstituted aryl is phenyl.

67. (Original) The compound of claim 66, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, amido, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

68. (Original) The compound of claim 67, wherein said substituent is alkyl, alkoxy, or nitro.

69. (Original) The compound of claim 1, wherein R^7 is heteroaryl-amino.

70. (Original) The compound of claim 69, wherein R^9 is hydrogen.

71. (Original) The compound of claim 70, wherein said heteroaryl is substituted or unsubstituted thioazolyl.

72. (Original) The compound of claim 71, wherein said thiazolyl is substituted with a substituted or unsubstituted aryl.

73. (Original) The compound of claim 72, wherein said aryl is phenyl.

74. (Original) The compound of claim 73, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, amido, trifluoromethyl, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

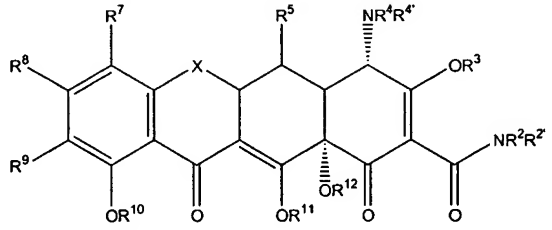
75. (Original) The compound of claim 74, wherein said substituent is nitro.

76. (Currently Amended) The compound of claim 1, wherein said compound is selected from the group consisting of:
Doxycycline 7-carbamic acid 7*H*-fluoren-7-ylmethyl ester;
7-(Naphthyn-1-yl) doxycycline urea;
7-(3-Methyl-1-butyl) doxycycline urea;
7-Phenyl doxycycline urea;
7-t-Butyl doxycycline urea;
7-Fmoc amino doxycycline;
7-(4'-Chloro-2-trifluoromethylphenyl) doxycycline urea;
7-(4'-Fluorophenyl) doxycycline carbamate;
7-(4'-Methoxyphenyl) doxycycline carbamate;
7-BOC amino doxycycline;
7-(3'Phenylthiazolyl) amino doxycycline;
7-(3'-Ethylthiazolyl) amino doxycycline;
7-(4"-Fluorophenylthiazolyl) amino doxycycline;
7-(4"-Methoxyphenylthiazolyl) amino doxycycline;
7-(Phenylthiazolylamino)-sancycline;
7-(3'-Nitrophenylthiazolyl) amino doxycycline;
7-(4'-Methyl, 5'-phenylthiazolyl) amino doxycycline;
7-(Adamantylthiazolyl) amino doxycycline;

Doxycycline 7-thiocarbamic acid 7*H*-fluoren-7-ylmethyl ester;
7-(Naphthyn-1-yl) doxycycline thiourea;
7-(3-Methyl-1-butyl) doxycycline thiourea;
7-Phenyl amino doxycycline thiourea;
7-t-butyl amino doxycycline thiourea;
7-(4'-Chloro-2'-trifluoromethylphenyl) doxycycline thiourea;
7-(4'-Fluorophenyl) doxycycline thiocarbamate;
7-(4'-Methoxyphenyl) doxycycline thiocarbamate;
7-(Naphthyn-1-yl) doxycycline urea 5-propanoic acid ester;
7-(Naphthyn-1-yl) doxycycline thiourea 5-propanoic acid ester, and pharmaceutically acceptable salts and prodrugs thereof.

Claims 77-81. (Cancelled)

82. (Currently Amended) A pharmaceutical composition comprising a therapeutically effective amount of a substituted tetracycline compound and a pharmaceutically acceptable carrier, wherein said substituted tetracycline is of the formula:



(I)

wherein:

X is CHC(R^{13}Y'Y), C$R^{6'}R^6$, S, NR^6, or O;

R^2 is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

R^4 and $R^{4'}$ are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$R^{2'}$, R^3, R^{10}, R^{11} and R^{12} are each hydrogen or a pro-drug moiety;

R^5 is hydrogen, hydroxyl, or a prodrug moiety;

R^6, $R^{6'}$, and R^8 are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

R^7 is hydrogen, dialkylamino, heteroaryl-amino, or $NR^{7c}C(=W')WR^{7a}$;

R^8 is hydrogen;

R^{13} is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

Y' and Y are each independently hydrogen; halogen; hydroxyl; cyano, sulfhydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

R^9 is hydrogen, $NR^{9c}C(=Z')ZR^{9a}$, or heteroaryl-amino;

Z is $CR^{9d}R^{9e}$, NR^{9b}, or O;

Z' is O or S;

R^{9a}, ~~R^{9b}, R^{9c}~~, R^{9d}, and R^{9e} are each independently ~~hydrogen,~~ ethyl, t-butyl, n-butyl, i-butyl, or n-pentyl, ~~alkenyl,~~ alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and R^{9d} and R^{9e} may be linked to form a ring;

R^{9b} and R^{9c} are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic;

W is $CR^{7d}R^{7e}$, NR^{7b} or O;

W' is O or S; and

R^{7a}, R^{7b}, R^{7c}, R^{7d}, and R^{7e} are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and R^{7d} and R^{7e} may be linked to form a ring;

and pharmaceutically acceptable salts thereof, provided that R^9 is not hydrogen, when R^7 is dialkylamino or hydrogen.

Claims 83-102. (Cancelled)